



PATENT SPECIFICATION

486,638

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COMPLETE SPECIFICATION

Improvements in Dental Syringes

I, HEINRICH HAGEMEIER, of 14, Lappenbergsallee, Hamburg, Germany, a German citizen, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to syringes of the kind wherein the plunger or piston is operated by means of a pair of hand grips in the same way as tongs and pliers. Such syringes are already in use by dentists for administering narcotics, the plunger being in this case pivotally connected to the hand grip or grips, so that the position of the plunger relative to the operating elements remains constant. The object of the present invention is to obtain a dental syringe of this kind which allows of a gradual, stepwise discharge of its contents in predetermined quantities, and the invention consists in providing the syringe for this purpose with a plunger comprising a screw spindle on which the operating elements act through the medium of an adjustable nut by which the position of the plunger within the barrel of the syringe can be regulated. The barrel is made long enough to allow the plunger to advance in the barrel in a plurality of successive steps.

With this construction of the syringe it is advisable to charge the latter with material through the medium of previously filled capsules from which the contents can thus be extruded stepwise by means of the plunger through a nozzle secured to the barrel or to the capsule, means being provided for admitting the capsule into the barrel either through the end of the latter or through lateral openings therein, and means being also provided for securing the capsule in position. In this manner the contents will be hygienically protected from outside influences. The plunger can be made to act on a piston which is fitted in the capsule as a closure for the latter and which may be adapted to co-operate with the plunger.

The capsule may be charged with tooth-filling cement in which case the cement can be transferred from the

syringe directly into the tooth cavity and forced into the latter by pressure on the hand grips. A complete and reliable filling of the tooth can thus be effected in a very short space of time without the introduction into the cavity of any filling instruments by which it may be contaminated and before any flow of saliva into the cavity can take place.

The syringe may be fitted with a bent extrusion nozzle which can be adjusted to the most convenient angle relative to the hand grips.

Fig. 1 of the accompanying drawings represents by way of example a sectional view of a syringe constructed according to the invention, and

Fig. 2 is an elevation thereof at right angles to Fig. 1.

The illustrated syringe comprises a body which is formed integrally with a hand grip 14 and which holds on a pivot 15 another hand grip 13 arranged in substantial symmetry with the hand grip 14 so that the syringe can be operated by means of the hand grips in the same way as a pair of pliers. Secured to the body opposite the hand grips is a barrel 10 in which a plunger comprising a screw spindle 17 is adapted to operate. The plunger is guided in a bore 20 in the body, and a widened portion 18 of this bore accommodates a headed nut 19 arranged adjustably on the screw spindle. The pivoted hand grip 13 is provided with a nose piece 16 which is preferably forked for accommodating the spindle and which engages under the head of the nut 19 so as to support it in opposition to a spring 21 which bears at one end against a shoulder 22 in the body and at the other end against the head of the nut. The spring tends to maintain the hand grip in its outer end position which is determined by a suitable abutment. By holding the hand grips and pressing them together, the grip 13 will be turned about its pivot, and the plunger 17 will be displaced in opposition to the spring 21 for extruding material from the barrel, the maximum displacement being determined by the abutment of the nut 19 against the shoulder 22. After each such displace-

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ment, the spindle 17 is screwed forwards in the nut by means of a milled head 23 for the extrusion of a fresh charge, the barrel being made long enough to allow of a plurality of successive extrusions the magnitude of which can be varied by a partial operation of the hand grip 13.

The syringe can conveniently be used for filling teeth with cement, and the latter can then be supplied in capsules such as 24 adapted for insertion into the barrel 10 either through the outer end thereof or through lateral openings 25. A screw cap 11 adapted to bear snugly against a conical end portion 29 of the capsule, is screwed onto the end of the barrel for securing the capsule to the latter. In the illustrated arrangement the capsule is fitted with a screw nipple for the reception of an extrusion nozzle 12 which is bent and adjustable so that it can be set at the most convenient angle relative to the hand grips 13, 14.

The nozzle 12 is turnably held in the screw nipple so that it can be angularly adjusted as required. For extrusion of the cement from the capsule, a piston 26 (usually of rubber and fitted in the capsule as a closure) may be employed with which the screw spindle 17 may co-operate through a ball joint of which the ball 27 fits into a cavity of the piston and is firmly attached to or formed with a socket 28 having a central bore in its lower surface into which bore fits the upper part of the spindle 17.

The parts 17 and 28 thus merely rest against one another in use. On release of the handles, the spindle 17 returns to its initial position whereas the member 28 with its spherical head 27 and the india rubber piston 26 remain in the position they have reached during the previous actuation of the handles by means of the forwardly driven spindle 17.

The syringe may be modified within the scope of the invention as defined by the appended claims. For instance the barrel 10 may be adapted to hold the cement and to co-operate direct with the piston 26 for

the extrusion thereof. Moreover the connection of the nozzle 12 to the capsule 24 or to the barrel may be effected by other means than those described and illustrated, and both hand grips may be pivoted for the operation of the plunger.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A dental syringe of the kind referred to provided with a plunger comprising a screw spindle on which the operating element acts through the medium of an adjustable nut by which the position of the plunger within the barrel of the syringe can be regulated.

2. A dental syringe as claimed in claim 1 provided with two hand grips which are symmetrically arranged relative to the screw spindle, one of the handles being pivoted and formed into a lever for co-operation with the nut on the screw spindle.

3. A dental syringe as claimed in claim 1 or 2 wherein the nut co-operates with the body of the syringe for limiting the displacement of the plunger.

4. A dental syringe as claimed in any of the preceding claims wherein the nut and a controlling spring therefore are accommodated in a recess in the body of the syringe.

5. A dental syringe as claimed in any of the preceding claims in combination with a capsule adapted to be accommodated in the barrel and fitted with a piston for the extrusion of the contents of the capsule through the syringe, the piston being fitted with a ball joint for co-operation with the screw spindle.

6. A dental syringe of the kind referred to constructed substantially as hereinbefore described and with reference to the accompanying drawings.

Dated this 7th day of September, 1937.

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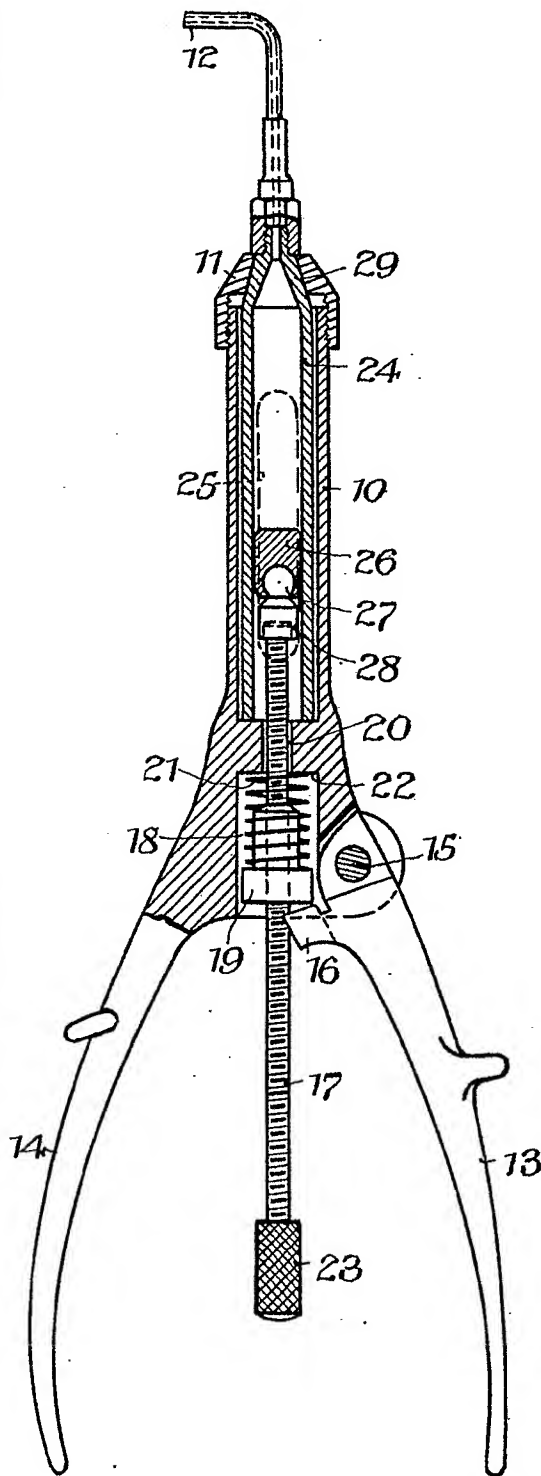


Fig. 1.

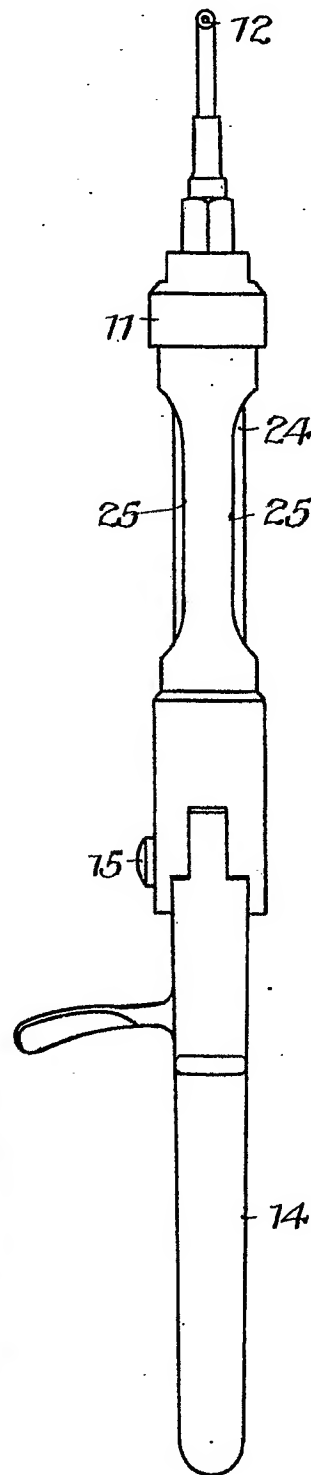


Fig. 2.

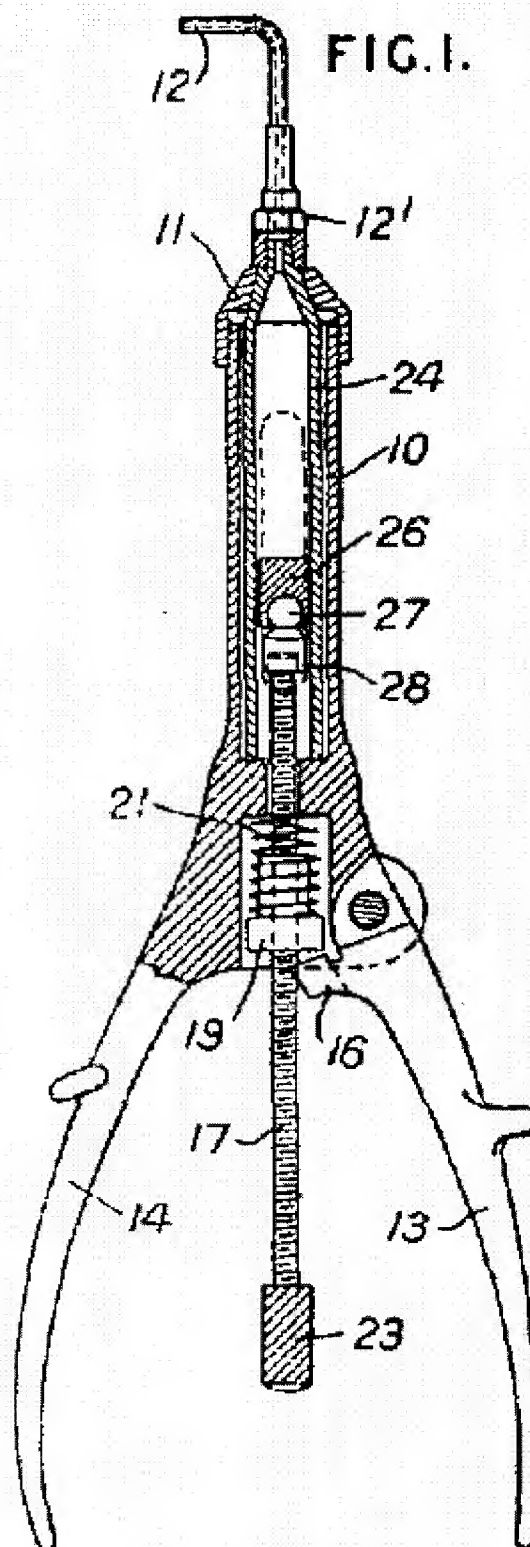
Improvements in dental syringes

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Abstract of **GB486638**

486,638. Dental syringes. HAGEMEIER, H. Sept. 7, 1937, No. 24422. [Class 81 (ii)] [Also in Group XXVIII] A syringe, particularly employable for injecting cement into tooth cavities, comprises a screw-threaded plunger rod 17 carrying a nut 19 engaged by a bifurcated lug 16 on a pivoted handle grip 13, operation of which presses forward the plunger 26 through a short stroke to expel a portion of the syringe contents. The nut 19 is returned by a spring 21, whereafter the plunger rod may be fed forward by turning a milled head 23 to set the syringe for a further stroke, the contents thus being extruded in successive steps. The rod 17 rests in a socket 28 in a ball joint 27 on the plunger 26, or may rest against the plunger itself. The grip 13 co-operates with a second grip 14 which may be integral with, or pivoted similarly to grip 13, to, the syringe body. The plunger 26 works in a barrel 10, or in a capsule 24, introduced into the barrel through the end thereof or through lateral openings therein, and secured by a screw-ring 11. A nozzle 12 having a cranked portion is adjustably rotatable in a part 12<1> secured as by screwing to the capsule 24 or the barrel 10.



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